

Application No.: 10/675,329
Response Dated: October 5, 2007
Reply to Office Action Dated: July 5, 2007

REMARKS

In a non-final Office Action dated July 5, 2007, the Examiner in charge of the application did not afford the application its earliest priority date, objected to the Declaration and rejected the pending claims under 35 U.S.C. §§ 112, 102, and 103.

Applicants respond to each of the Examiner's objections and rejections below. In view of the amendments noted above and the remarks presented herein, Applicants respectfully request reconsideration of the merits of the application. Accordingly, Applicants respectfully request that a timely notice of allowance be issued in this case.

Priority Claim

The Examiner alleged that US Provisional Patent Application No. 60/415,119, an application to which this application claims the benefit of, failed to disclose "subarrays," and therefore afforded the application a priority date of September 20, 2003, which is the filing date of the application. Applicants respectfully disagree.

The provisional application clearly discusses the concept of a "subarray". For example, at paragraphs [0005]-[0007] of US Provisional No. 60/415,119, there is a detailed description of the concept of an array of arrays and how one would use them to assay multiple samples in parallel. There is also a discussion of subarrays on microarrays and the necessity for alignment marks surrounding each subarray (see paragraphs [00014]-[00016] of the provisional application). Based on the above, clearly US Provisional Patent Application No. 60/415,119 discloses the concept of "subarrays" on a word-for-word basis. As such, applicants are properly entitled to the priority date of September 30, 2002 corresponding to the provisional application. Applicants respectfully request that the objection to the priority claim be withdrawn.

Defective Declaration

The Examiner objected to the Declaration for having non-initialed/non-dated changes. Specifically, non-initialed and non-dated changes were made to inventor Barrett's information. A substitute Declaration, signed by all Applicants and having inventor Barrett's correct information, is enclosed. In view of the substitute Declaration, Applicants

respectfully request reconsideration of the objection as applied to the Declaration.

Rejections Under 35 U.S.C. § 112, second paragraph

Claims 8 and 11-12 are rejected under 35 U.S.C. § 112, second paragraph, as indefinite. With respect to Claim 8, it is alleged that the phrase "the hapten comprises is a biotin or dinitrophenol (DNP)" is indefinite. Applicants amend Claim 8 to delete "is a." In view of this amendment, Applicants respectfully request reconsideration of this rejection as applied to Claim 8.

With respect to Claims 11-12, it is alleged that the phrase "photopatterning a group-bearing phosphoramidite" in Claim 11 is vague and indefinite in view of the meaning ascribed "photopatterning," the discussion of "photodeprotection," and the discussion of visualizing haptenylated borders in the application. Applicants respectfully disagree.

Claim 7, from which Claim 11 depends, is directed toward a method of making the microarray, which includes the step of depositing a hapten and an illuminating compound around the plurality of subarrays to form the alignment mark. Claim 11 requires that the hapten is deposited by photopatterning, which as the application notes and as the Examiner acknowledged, means that the hapten is deposited on the array following photodeprotection by the mirrors of the MASTM instrument. See paragraph [00018] of the Specification. The discussion in paragraph [00011] of the application makes quite clear to one of ordinary skill in the art that the haptenylated border is visualized not by the MASTM instrument, but by "chemical or enzymatic means."

Nevertheless, in an effort to advance prosecution of the application, Applicants amend Claim 11 to recite that "the hapten is deposited following photodeprotection by mirrors of the MASTM instrument." Applicants submit that given this amendment, one of skill in the art understands what is meant by "photopatterning." In view of the amendment noted above and the remarks presented herein, Applicants respectfully request reconsideration of this rejection as applied to Claims 11-12.

Rejections Under 35 U.S.C. § 102

Claims 7-8 and 11-13 are rejected under 35 U.S.C. § 102 as anticipated by US Patent

No. 6,362,004 to Noblett. It is alleged that Noblett discloses an apparatus and method of using fiducial marks on a microarray that anticipate the pending claims. Applicants respectfully disagree.

Contrary to the Examiner's assertion, Noblett fails to disclose each and every element set forth in the claimed methods as required by MPEP §2131. Noblett discloses that by using microarray substrates with one or more fiducial marks located at predetermined locations with respect to a microarray sample, the sample can be positioned and aligned with greater precision than with conventional systems. While Noblett discloses microarrays having fiducial marks and methods of using conventional microarrays, nowhere does it disclose methods of making a microarray as claimed by Applicants. In fact, contrary to Applicants' disclosure, Noblett leaves the details for the production of microarrays to other manufacturers. See Noblett Column 5, lines 26-27. At best, Noblett suggests that microarrays can be made by a robotic placement system. See Column 5, lines 57-67. There is no discussion in Noblett relating to using the same maskless array synthesizing instrument to construct both the probe sets and the alignment marks surrounding the subarrays of the microarray. Further, Noblett does not even mention the term "happen" which is a limitation of Applicants' claims. Therefore, the instant claims are not anticipated by Noblett.

To advance prosecution on the merits of the application and to further distinguish the application from Noblett, Applicants amend Claim 7 to recite that the probe sets and the happen are built/deposited via the same MAST™ instrument. Support for this limitation is located in, e.g., paragraphs [00011] and [00019] of the application. Because Noblett does not disclose methods of making microarrays having visual alignment marks built/deposited by the MAST™ instrument, it cannot anticipate the amended claims. Based on these amendments and remarks, Applicants respectfully request reconsideration of this rejection as applied to Claims 7-8 and 11-13.

Rejections Under 35 U.S.C. § 103

Claims 7-13 are rejected under 35 U.S.C. § 103 as obvious over Noblett, *supra* in view of US Patent No. 6,936,416 to Zhu *et al.* It is alleged that although Noblett did not teach biotin haptens, streptavidin conjugates or horse radish peroxidase reporters, it would

have been obvious to one of ordinary skill in the art after reading Zhu *et al.* Applicants respectfully disagree.

As noted above, Noblett is flawed as a reference against the instant claims because it fails to contemplate or disclose fundamental aspects of the claimed invention. In particular, Noblett fails to disclose methods of making microarrays having both probe sets and alignment marks placed on the array with the same MASTTM instrument. Noblett, also fails to disclose the presence of haptens on the microarray. Zhu *et al.* do not cure the deficiencies of Noblett.

Zhu *et al.* disclose methods for monitoring the expression of human cytomegalovirus (HCMV) infections, including detection methods based on biotin and streptavidin conjugates. Zhu do not, however, contemplate or disclose methods of making microarrays having alignment marks deposited with the MASTTM instrument. The term "hapten" does not appear in Zhu *et al.* Zhu does disclose signal detection methods by which hybridized nucleic acids are identified by detecting one or more labels attached to the sample nucleic acids. Zhu discloses a long list of detectable labels that may be added directly to the nucleic acid sample for monitoring expression of HCMV infections, not as alignment marks surrounding sub-arrays.

In contrast to Zhu *et al.*, the application does not use biotin-labeled haptens to detect any genes at all. Instead, the application uses biotin-labeled haptens to delineate areas surrounding the subarrays. Further Zhu *et al.* teach away from the invention as it discloses chip masking techniques (see Zhu *et al.*, Col. 13-14) rather than applicants' maskless techniques. Therefore, one skilled in the art after reading Zhu would be discouraged from using a maskless array synthesizing instrument to practice the claimed invention. As such, Applicants query how their methods are rendered obvious in view of the combination of Noblett and Zhu *et al.* It would not have been obvious to combine Noblett and Zhu to arrive at the present invention, as neither disclose using a MASTTM instrument to both construct the probe sets and to deposit the alignment marking surrounding the plurality of subarrays on the microarray. In view of the amendments noted above and the remarks presented herein, Applicants respectfully request reconsideration of this rejection as applied to Claims 7-13.

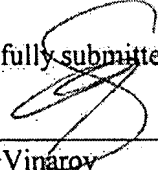
Fees

No fee is believed due in connection with this submission. However, if a fee is due, in

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this or any subsequent response, please charge the fee to Deposit Account No. 17-0055.
Likewise, no extension of time is believed due, but should any extension be required in this or any subsequent response, please consider this to be a petition for the appropriate extension of time and a request to charge the petition fee due to the same Deposit Account.

Respectfully submitted,



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